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Laboratory research of the effect fertilizers on the soil structure

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Abstract

© 2016 Authors. Phosphorus is an important element of plant nutrition, affecting the biotransformation of nitrogen in soils. The effect of the application of phosphorus fertilizers on the mineralization of nitrogen in soils is actively studied, however, little attention is paid to their effect on the content of intermediate mineralization compounds, such as free amino acids. This study evaluated the effect of various doses of ground phosphate flour and simple superphosphate (0; 1.0, 2.1, 4.2, 10.6, 53.1, 212.5, 1062.5 g kg-1) in the incubation experiment on the content of 15 free amino acids in the soil. At various doses of ground phosphate flour, the total content of free amino acids ranged from 7.8±1.1 to 14.4±2.1 μg kg-1, even the minimum recommended dose of ground phosphate flour (1.0 g kg-1) caused a significant decrease in their concentration. A high correlation between the amino acid concentration and the microbial biomass of the soil (Cmic) is shown. In general, the use of superphosphate positively influenced both the microbial biomass of the soil and the content of free amino acids. At various fertilizer doses, the total concentration of free amino acids significantly increased in comparison with the control and varied from 37.5±8.5 to 67.1±15.2 μg kg-1. © 2018 Authors.

Keywords

Free amino acids, Ground phosphate flour, Incubation experience, Phosphoric fertilizers, Superphosphate

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